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journal homepage: www.elsevier.com/locate/jdevecoDirect democracy and resource allocation: Experimental evidence from Afghanistan[☆]Andrew Beath^a, Fotini Christia^b, Ruben Enikolopov^{c,d,*}^a World Bank, United States^b Department of Political Science, Massachusetts Institute of Technology, United States^c ICREA, IPEG, Universitat Pompeu Fabra, Barcelona GSE, Spain^d New Economic School, Russia

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ABSTRACT

Direct democracy is designed to better align policy outcomes with citizen preferences. To test this proposition, we randomized whether 250 villages across Afghanistan selected projects by secret-ballot referenda or by consultation meetings. We find that referenda reduce the influence of local elites over both project type and location. Consistent with previous experimental results, we also find that referenda improve villagers' perceptions of the local economy and of the quality of local governance. However, we find no systematic evidence that selecting projects via referenda increases the average impact of such projects.

1. Introduction

Decentralization efforts in some developing countries have been undermined by the diversion of public resources by local elites (Bardhan, 2002; Bardhan and Mookherjee, 2006). Direct democracy, which promises to better align project resource allocation outcomes with public preferences, is one tool that has been used to address this problem (Matusaka, 1995, 2004, 2005). However, while recent evidence (Olken, 2010) shows that direct democracy can improve the legitimacy of allocation processes *per se*, it also casts doubt on whether direct democracy can substantively affect allocation outcomes. Uncertainty thereby exists as to whether direct democracy is an effective tool to reduce elite capture over the allocation of public resources.

This study draws on a field experiment conducted across 250 villages in Afghanistan to identify whether directly democratic procedures can limit elite influence, even in an environment where direct democracy conflicts with customary norms of local decision-making. In

the experiment, half of the villages were randomly assigned to select local development projects by secret-ballot referenda, with the remainder assigned to select projects at public meetings convened by elected village development councils. The referendum procedure allocated funding to projects that received the most votes from villagers, while the meeting procedure allocated funding based on decisions made by development councils following the meeting. Both procedures employed an identical agenda-setting method, with the development council compiling the list of proposed projects after consultations with villagers.

In order to isolate the effect of direct democracy on allocation outcomes generally and on the ability of elites to realize their preferences specifically, we compare allocation outcomes with the *ex-ante* preferences of (non-elite) male villagers and with those of male elites. We find that male villagers' preferences are a significant determinant of allocation outcomes in both referenda and consultation meetings. However, the preferences of male elites matter only in consultation meetings. Projects selected by referenda are also located

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farther away from the houses of village headmen. The preferences of female elites, who are traditionally excluded from village-level decision-making, do not affect allocation outcomes regardless of the decision-making rules. Overall, our results indicate that direct democracy limits elite influence over resource allocation.

Theoretically, the welfare effects of reducing elite influence over resource allocation are ambiguous. Differences between elite and public preferences may reflect not only different interests but also informational advantages of elites (Labonne and Chase, 2009; Rao and Ibáñez, 2005; Owen and Van Domelen, 1998). It is thus feasible that direct democracy may reduce general welfare even while limiting elite influence. However, evidence provided by subjective measures of welfare shows that referenda improve villagers' assessments of their situation. This effect on subjective perceptions appears to be caused both by the process itself and by the reduction in elite influence. Specifically, referenda improve villagers' perceptions of the local economy and of the quality of local governance, even when project type is controlled for. Villagers' perceptions also improve when selected projects are less aligned with elite preferences. Objective measures of welfare, however, don't align with the effects on subjective perceptions. In particular, referenda have no systematic effect on the speed of project implementation, the impact of projects on development outcomes, or on household income or consumption.

Research on direct democracy has examined effects on the size of government (Matsusaka, 2005; Funk and Gathmann, 2011), political participation and redistributive spending (Hinnerich and Pettersson-Lidbom, 2014), discriminatory local policies (Hainmueller and Hangartner, 2015), and happiness (Frey and Stutzer, 2005). Using experimental variations similar to those employed in this study, Olken (2010) finds a strong positive effect of the use of direct democracy in Indonesia on villagers' satisfaction, but no effect on allocation outcomes other than the location of women's projects. Our study contributes to the literature on the effects of political decision rules in general, and direct democracy in particular. We extend the analysis of Olken (2010) by increasing the sample size and examining the effect not only on resource allocation and subjective assessments of project quality, but also on the speed of project implementation, on project effectiveness, and on household welfare. Our results reinforce the finding of Olken (2010) that direct democracy can improve subjective outcomes, but differ from Olken (2010) in demonstrating that referenda can reduce the influence of elites over allocation outcomes.

This paper is divided into six sections: Section 2 describes the setting of the experiment; Section 3 describes the design of the experiment, sample, and data collection; Section 4 presents the methodology and results of the empirical analysis; Section 5 discusses the results; and Section 6 concludes.

2. Background information

The field experiment described in this paper was undertaken in coordination with the National Solidarity Program (NSP), a nationwide community-driven development program executed by the Government of Afghanistan. The following sections provide further details on NSP (Section 2.1) and the structures for local governance and decision-making in rural Afghanistan (Section 2.2).

2.1. National Solidarity Program

NSP was devised in 2002 by the Government of Afghanistan to deliver services and infrastructure to the rural population and build representative institutions for village governance. NSP has been implemented in over 35,000 communities across all of Afghanistan's 34 provinces and has financed 90,000 development projects at a cost of \$2.3 billion, making it the largest development program in the country. The program is structured around two interventions: (i) the creation of an elected Community Development Council (hereafter, development

council); and (ii) the disbursement of block grants to the development council for implementation of village projects. The program is executed by the Afghan Ministry of Rural Rehabilitation and Development, facilitated by contracted NGOs, and funded by bilateral and multi-lateral donors.

In order to encourage more representative institutions for village governance, NSP mandates the creation of a gender-balanced development council through a secret-ballot, universal suffrage election. Once development councils are formed, NSP disburses block grants valued at \$200 per household – up to a village maximum of \$60,000 – to fund local development projects,¹ with villages required to contribute at least 10 percent of project costs, which they largely do in the form of labor. The development council selects projects in consultation with the village community. Selected projects are ordinarily focused on the construction or rehabilitation of local small-scale infrastructure (e.g., drinking water facilities, irrigation canals, roads and bridges, or electrical generators) and human capital development (e.g., training and literacy courses).

The development council is mandated to consist of an equal number of male and female members, with the total size being proportional to the number of families residing in the village. The average size of development councils in the sample is 16 people. There is a moderate degree of overlap between development councils and customary leaders. Villagers identified approximately 40 percent of development council members, and 70 percent of development council heads, as members of the pre-existing elite (Beath et al., 2016).

NSP implementation in a single village generally takes around three years. Following the creation of development councils, an average of twelve months elapses before project implementation starts, as development councils and villagers select and design projects (the stage of the process examined in this paper), receive funds, and, if necessary, procure contractors for project construction. Once construction commences, it takes up to nine months for projects to become operational, although the timeline varies significantly based on project type.

NSP does provide repeat block grants to participating villages, although the contingencies of donor funding of the program mean that there is no set schedule by which such grants occur. The process for conducting follow-up elections for the development council is also uncertain. Per NSP rules, villages are supposed to hold reelections for development council positions every four years, although as follow-up elections are not facilitated, it is unclear whether these occur. Given this, and the general uncertainty which accompanies planned future development activity in Afghanistan, villagers potentially perceive NSP as a one-shot event, which limits the scope for log-rolling among local actors.

2.2. Local governance and public decision-making in rural Afghanistan

The lack of state consolidation in Afghanistan and the country's recent history of violent conflict have resulted in a weak central government (Barfield, 1984). Rural communities have thus developed sophisticated – albeit informal – customary local governance structures and practices to administer justice, set community rules, and provide local public goods (Shahrani, 1998; Pain and Kantor, 2010). Despite the attempted reorganization and politicization of local governance by various regimes over the past decades (Nojumi et al., 2004; Rahmani, 2006), customary local governance structures and practices have remained the dominant force in local public decision-making (Brick, 2008; Kakar, 2005).

The foundation of governance in rural Afghanistan is the local *jirga* or *shura*, a participatory council that has traditionally managed local

¹ The average block grant in the villages included in the sample was approximately \$31,000.

public goods and adjudicated disputes (Nojumi et al., 2004). Council members tend to be elders of families in the village (Rahmani, 2006) and convene when there is an issue to resolve (Boesen, 2004). In addition to councils, villages ordinarily have a headman (termed a *malik*, *arbab*, or *qariyadar*) – usually a large landowner – who serves as a liaison between the village and the sub-national government (Kakar, 2005). The local religious authority, the *mullah*, is responsible for conducting rites and mediating disputes involving family or moral issues (Rahmani, 2006). The accountability of these institutions varies with the degree to which villagers are economically dependent on local elites (Pain and Kantor, 2010).

A salient feature of the *jirga* and *shura* is the practice of decision-making by consensus. The consensus-based principle is considered to increase acceptance of decisions, but can be compromised by the pronounced social inequality that exists in parts of rural Afghanistan (Boesen, 2004), with decisions effectively made by a narrow group of prominent tribal elders (Kakar, 2005). Due to the principle of *purdah*, which stipulates that women should be generally hidden from public view (Azarbaijani-Moghaddam, 2009), women do not participate in the *shura* or *jirga* and are excluded from local decision-making.

3. Experimental design

This section discusses the randomization of allocation procedures in the 250 treatment villages in the evaluation (Section 3.1), while also detailing the sample (Section 3.2), and the phasing of the experiment and data collection (Section 3.3).

3.1. Allocation procedures

Following the election of the development council, villages select and prioritize projects to be funded by the NSP block grant. Villages in the sample were randomly assigned to one of two such procedures²:

Referendum: All adult village residents – both men and women – are eligible to vote, by secret ballot, for the project that they most prefer out of a list of proposed projects. At least 50 percent of eligible voters in the village must vote in order for the referendum to be valid. Projects with the most votes are selected for implementation, with the number of selected projects determined by the size of the block grant. Selected projects are prioritized according to the number of votes received, so the sequence of implementation reflects the project's relative popularity.³

Consultation meeting: The development council convenes and moderates a meeting, open to all villagers – men and women – to discuss and select projects for funding. There is no specific requirement on how many villagers must attend in order for the meeting to be valid. Informal points-of-procedure (e.g., a show-of-hands) may be employed during the meeting, but no formal vote takes place. Based on the outcome of the discussion, but at its ultimate discretion, the development council selects and prioritizes projects for funding.⁴

Under both allocation procedures, the list of proposed projects is prepared using an identical agenda-setting procedure, whereby the development council compiles the list after consultation with the villagers. After the list of proposed projects is compiled, villagers cannot change the agenda irrespective of the method of project selection.⁵ Importantly, the allocation procedure was announced before

² A detailed guide on the procedures is available at: <http://nsp-ie.org/toolsanddata/sti/sti2e.doc>.

³ In less than 8 percent of villages, the prioritized project was not the one receiving the most votes. Our results are robust to using the project that received the most votes as the prioritized project.

⁴ This procedure is similar to the customary practice in rural Afghanistan of calling a *jirga* or *shura* to decide on important community matters.

⁵ Although the nature of the consultation meeting would have allowed villagers to suggest a change in the list of proposed projects, there is no indication in the monitoring data that this happened. However, as the method of project selection was known when

the list of proposed projects was prepared.

3.2. Sample and randomization

The randomization of allocation procedures occurred in 250 villages assigned to receive NSP and which formed the treatment group for the randomized impact evaluation of NSP.⁶ The 250 villages are evenly split across ten districts in northern, northeastern, eastern, central, and western Afghanistan (see Figure A1 in the Online Appendix).⁷ Despite the necessary exclusion of southern areas from the sample due to security concerns, the ten districts are broadly representative of Afghanistan's ethno-linguistic diversity, with five predominantly Tajik districts, four predominantly Pashtun districts, one predominantly Hazara district, and two districts with significant populations of Uzbek and Turkmen minorities.

Data from the 2007–08 National Risk and Vulnerability Assessment (NRVA) allow for a comparison of the 250 sample villages with a randomly selected sample of the population of rural Afghanistan. Although there are no significant differences in the age of respondents or in their income (see Table A1 in the Online Appendix), sample villages are slightly more likely to be engaged in production activities related to agriculture and have slightly worse access to medical services and better access to electricity. These differences are likely to be driven by the fact that villages located close to provincial centers were more likely to receive NSP in the first phase of the program, whereas the sample is drawn from those villages mobilized by the second phase of NSP.

In addition to project selection procedures, the NSP impact evaluation also randomized the method by which the development council was elected (Beath et al., 2016).⁸ To ensure random and independent assignment across both election and project selection dimensions, villages were divided in quadruples using an optimal greedy matching algorithm (King et al., 2007). Specifically, 25 treatment villages in each district were paired to minimize differences in background characteristics⁹ within each pair (leaving one village unpaired) and then matched in pairs of pairs to form quadruples.¹⁰ Unpaired villages across districts were also grouped into two quadruples (leaving two villages unmatched). Each village within the quadruple (and the two unmatched villages) was then randomly assigned to one of four combinations of allocation procedures and development council election procedures. This assignment procedure ensures that each village in the sample had an equal probability of being assigned to either procedure.

The randomization resulted in good balance between villages assigned to the two allocation procedures. Table 1 presents a comparison between the two groups of villages across various pre-intervention characteristics. The differences between the two groups never exceed

(footnote continued)

the lists of proposed projects were prepared, village leaders may have strategically chosen proposed projects (see discussion below).

⁶ The effects of the NSP program on women's rights and on violence are analyzed in Beath et al. (2013, 2012). In this paper, however, we focus on the comparison of allocation procedures within villages that have received NSP, rather than on the comparison with the villages that have not received the program.

⁷ A detailed description of the sample selection procedures is provided in the Online Appendix.

⁸ Since there are no clear theoretical predictions on how the method of development council election should affect elite influence, we do not distinguish between villages with different methods of elections in our analysis. We check that there are no significant differences in the identified effects between villages with different methods of council elections.

⁹ These characteristics include village size (based on data collected by Afghanistan's Central Statistics Office) and a set of geographic variables (distance to river, distance to major road, altitude, and average slope).

¹⁰ Pairs of pairs were formed by performing the same matching procedure treating each pair as a single village with background characteristics that equal the average of the respective characteristics for the two villages in a pair.

Table 1
Balance of pre-treatment covariates.

	Village meeting	Referendum	Standardized difference	F-statistic for testing equality of means	p-value for testing equality of means
Number of households in village	110.79	126.22	0.13	1.51	0.221
Size of household of respondents	9.73	9.85	0.02	0.10	0.754
Age of respondent	44.04	43.64	0.03	0.39	0.534
Respondent is not formally educated	0.71	0.71	0.00	0.00	0.958
Household is food secure	0.45	0.45	0.02	0.07	0.787
Source of drinking water is unprotected spring	0.28	0.26	0.03	0.11	0.745
Respondent has access to electricity	0.17	0.13	0.10	0.95	0.330
Male health worker is available	0.12	0.12	0.00	0.00	0.980
Female health worker is available	0.09	0.10	0.04	0.25	0.616
Index of assets	0.01	-0.01	0.07	1.08	0.300
Total food expenditure in past 30 days (Afghanis)	3512.30	3611.80	0.05	0.38	0.537
Respondent received loan in past year	0.46	0.48	0.03	0.19	0.665
Respondent believes people should pay taxes	0.37	0.43	0.13	2.79	0.096
Respondent prefers drinking water project	0.30	0.29	0.03	0.17	0.684
Respondent prefers school project	0.16	0.18	0.06	0.66	0.417
Respondent prefers road or bridge project	0.13	0.14	0.04	0.41	0.524
Respondent attended meeting of shura	0.32	0.32	0.02	0.04	0.837
Female respondent owns private land	0.34	0.30	0.10	1.03	0.312

Notes: comparison of means accounts for clustering of errors at the village level.

13 percent of the standard deviation. A comparison of means indicates that for only one of eighteen indicators is the difference significant at the 10 percent level, with a p-value of 0.096.

3.3. Phasing of intervention and data collection

The baseline survey was administered in September 2007, prior to the assignment of allocation procedures. Development council elections occurred between October 2007 and May 2008 and the resource allocation process took place between November 2007 and August 2008.¹¹ Both development council elections and the resource allocation process were monitored, providing additional data on the respective processes. The midline survey was administered between June and October 2009 following the start of project implementation. The endline survey administered between May and October 2011, at which time 99 percent of NSP-funded projects in the sample villagers were fully completed. Data on the location of NSP and non-NSP projects was collected between June and November 2011.

3.4. Resource allocation process

To assess compliance with the prescribed allocation procedures (see Section 3.1), we monitored the implementation of procedures in 127 randomly selected villages (63 villages assigned to meetings and 64 villages assigned to referenda).¹² Data was generated both by monitors' observations and by 1238 interviews of male villagers conducted following their participation in the allocation process. For villages that held referenda, we obtained data on voting outcomes for all villages, including for villages that were not monitored.

On average, 12 development council members and 143 villagers attended village meetings, which is about one-third of the average adult population of the sample villages (see Table 2). Monitoring data indicates that council members dominated meeting discussions, with approximately half of the council members expressing their opinion compared to only one-of-eight male villagers and one-of-twenty female villagers in attendance.

¹¹ Across the sample, there was at least a month between development council elections and project selection.

¹² Visits of monitors were unannounced and monitors were explicitly instructed not to interfere in the allocation process or try to affect the outcome in any way.

Table 2
Participation by decision-making procedure.

	Villagers				Development council members		
	Obs.	Average number	Avg. share of adults	Std. dev.	Obs.	Mean	Std. dev.
Village meeting (Monitored villages)							
Total	54	143	33%	119	56	15	9
Male	63	71	31%	61	63	7.1	2.8
Female	54	75	35%	61	55	7	3.8
Referendum (Monitored villages)							
Total	116	251	61%	162			
Male	116	140	63%	102			
Female	97	133	69%	91			

Notes: The actual turnout is somewhat higher, as the adult population includes people over 15 years of age, whereas only people 18 and over are eligible to vote.

Participation in referenda was substantially higher, with an average of 251 villagers voting, which constitutes slightly more than 60 percent of the average adult population. The requirement that turnout reach 50 percent of the population was satisfied in all villages. Referenda were administered with a generally high degree of professionalism: 99 percent of monitored polling stations had lists of eligible voters, 97 percent of stations checked names off a registration list, and voters' privacy was considered to be assured in 83 percent of villages. In every monitored referendum village, those projects which received the most votes were selected. A monitor considered the vote-counting process to be flawed only in one village. In 98 percent of monitored referenda, allocation results were announced immediately following the counting of votes.

Results of post-selection interviews indicate that the process was well-regarded by villagers. Although 40 percent of respondents in both groups reported that some important projects had not been considered, almost all respondents expressed their general satisfaction with the allocation procedure. 99 percent of respondents in referendum villages and 93 percent in meeting villages believed that the allocation results would determine which projects would be implemented.

4. Data

We identify the effects of direct democracy on four sets of outcomes of interest: (i) degree of alignment between resource allocation outcomes and elite and non-elite preferences; (ii) location of projects relative to the houses of members of the village elite; (iii) subjective measures of economic welfare and of the quality of local governance; and (iv) project implementation and performance. The following sections provide further information on the sources of data on: *ex-ante* project preferences (Section 4.1); allocation outcomes (Section 4.2); project locations (Section 4.3); subjective measures of welfare (Section 4.4); and project implementation and performance (Section 4.5).

4.1. Ex-ante project preferences

Data on *ex-ante* preferences is drawn from the baseline survey. In each village, the survey was administered to ten randomly selected male heads-of-household and a focus group of male village leaders. The male focus group was comprised of between six and nine of the most important male leaders in the village, who were ordinarily members of the male village *shura/jirga*.¹³

In each of the survey instruments, respondents were asked to indicate – from a list of fifteen potential project types – the type of project that they believed should be selected if the village was provided with a \$60,000 grant.¹⁴ Using this data, we construct village-level dummy variables indicating the type of project most frequently preferred by each group of respondents.¹⁵ This provides village-level measures of the preferences of male villagers and male elites.

Table 3 reports the proportion of villages in which a particular type of project was preferred by the majority of respondents in each respective group.¹⁶ The results indicate that there are no significant differences in the distribution of project preferences in villages assigned to the two different allocation procedures. In particular, a chi-square test does not reject the hypothesis that they are drawn from the same distribution.

There is a noticeable difference in the preferences of male villagers and those of male elites. A chi-square test rejects the hypothesis (at the 0.1 percent level) that the distributions of preferences of these two groups are the same. Drinking water projects are the most preferred project among male villagers by a large margin, followed by schools and roads and bridges. The most preferred project for male elites is irrigation, followed by drinking water projects, health facilities, and roads and bridges. The magnitude of these differences is substantial: irrigation projects are almost twice as popular among male elites as they are among male villagers; the difference for electricity projects is almost threefold. These differences in preferences reflect the higher likelihood of elites owning land requiring irrigation or appliances that use electricity.

The preferences of male villagers and male elites diverge not just in

¹³ Where the village had a functional village council, enumerators were instructed to request the participation of all of the regular members of this council in the focus group. If no village council existed in the sample village, enumerators were instructed to convene a meeting of the village headman and other residents of the village that were identified as local power-holders by the villagers.

¹⁴ Respondents in the focus groups were asked to identify one project from a list of 15 possible projects, while individual respondents were asked to select and prioritize three projects from the same group of 15. To ensure comparability, we focus on the project that was named as the most important in the individual surveys.

¹⁵ In the event that two or more projects had the same number of respondents preferring them and these numbers of respondents exceeding those preferring other projects, the respective projects were all marked as the most preferred. Answers to the question about project preferences for male elites were not available for four villages (two referendum and two village meeting villages).

¹⁶ The results are similar if we look at individual-level preferences – that is, the share of respondents in the respective group of villagers that prefer a particular type of project (see Table 2 in the Online Appendix).

aggregate, but also within villages. Only in 45 percent of villages was the same project preferred by male villagers and male elites. There is also high variance in the shares of male villagers and male elites that prefer different projects. Fig. 1 shows that the distribution of these differences is widely spread for the four types of projects that were most frequently implemented.¹⁷ Thus, in most villages, there was substantial divergence in preferences of male villagers and male elites, both in the modal preferred project and the share of respondents from the group that supported the project.

In addition to preferences of male villagers and male elites, the baseline survey ascertained the preferences of members of a focus group of prominent women in the village.¹⁸ However, the baseline survey was not administered to a random sample of female villagers due to financial and logistical constraints, so we do not have information on the preferences of (non-elite) female villagers. Due to this limitation and because women traditionally play a limited role in the village-level decision making process (see Section 2.2 above), we focus on the comparison between male villagers and male elites in the benchmark specification and analyze female preferences separately.

4.2. Resource allocation outcomes

Data on allocation outcomes indicates whether a particular project was (i) proposed; (ii) selected; and (iii) prioritized. Data was provided by NGOs overseeing the allocation process for 235 out of the 250 villages in the sample.¹⁹ The data covers 1,204 proposed, 641 selected, and 229 prioritized projects. Table 4 tabulates outcomes by procedure. The median numbers of proposed, selected and prioritized projects in the sample were five, three, and one respectively and there were no statistically significant differences in these numbers between villages assigned to different procedures.

The most frequently proposed selected and prioritized projects were: roads and bridges; irrigation; drinking water; and electricity. Schools and health facilities, despite being preferred by relatively large numbers of both male villagers and male elites, were very rarely proposed due to a requirement that the implementation of such types of projects be coordinated with the respective government ministries.²⁰

Road and bridge projects – which had the smallest divergence of preferences between male villagers and male elites (see Table 3) – were the most likely to be proposed and selected, but were the least likely of the four main project types to be prioritized. Drinking water projects, which were more popular among male villagers than among male elites, were the second most likely to be prioritized and selected.

¹⁷ This figure excludes projects that did not have a single respondent (either a male villager or a member of the male elite) supporting them. Taking such projects into account adds a large mass of projects at zero in the distribution of differences in preferences (see Figure A2 in the Online Appendix).

¹⁸ Members of the female focus group were mostly the relatives (wives, daughters etc.) of male power holders in the village, with half of the respondents indicating that a member of their family is a member of the village *shura/jirga*. This information was not available for two villages (one referendum and one village meeting village).

¹⁹ The 15 villages for which the data was not received included seven villages that did not comply with the assignment of NSP treatment (which was driven primarily by the confusion between villages with similarly sounding names) and villages where the NGO had not gathered the necessary information. In both cases, attrition is not correlated with the assigned allocation procedure.

²⁰ In the analysis that follows, we exclude irrelevant projects (using the same approach as Chattopadhyay and Duflo (2004)) by grouping the 15 possible project types into five categories: (i) roads and bridges; (ii) irrigation; (iii) drinking water; (iv) electricity; and (v) other (which include men's courses, health courses, schools, health facilities, seeds, agricultural equipment, livestock, microfinance programs, communal toilet facilities, and community centers). The four types of projects not included in the "other" category are the four most popular types of selected projects. If there were more than one project of the same type in a village, they were combined into a single project. The differences in preferences between male villagers and male elites persist if we group projects in these five categories (see Table A3 in the Online Appendix).

Table 3
Projects most preferred ex-ante by male villagers and male elites (village level).

Most preferred project is:	Male villagers			Male elites			Difference (3)–(6) (7)
	Village meeting (1)	Referendum (2)	All (3)	Village meeting (4)	Referendum (5)	All (6)	
Drinking water	36.0%	40.8%	38.4%	27.6%	23.6%	25.6%	12.8%
Schools	18.4%	23.2%	20.8%	25.2%	19.5%	22.4%	–1.6%
Roads and bridges	18.4%	18.4%	18.4%	25.2%	21.1%	23.2%	–4.8%
Health facilities	16.0%	15.2%	15.6%	22.0%	24.4%	23.2%	–7.6%
Irrigation	17.6%	12.0%	14.8%	25.2%	29.3%	27.2%	–12.4%
Electricity	6.4%	4.8%	5.6%	16.3%	19.5%	17.9%	–12.3%
Livestock breeding	1.6%	0.0%	0.8%	5.7%	8.1%	6.9%	–6.1%
Agriculture accessories	0.0%	0.0%	0.0%	4.1%	10.6%	7.3%	–7.3%
Other	0.0%	1.6%	0.8%	16.3%	14.6%	15.4%	–14.6%
Chi-square	6.69			6.77			77.17
p-value	0.46			0.56			0.00
Observations	125	125	250	123	123	246	

Notes: The table shows the share of villages in which a particular type of project was supported by a plurality of respondents in each of the two group of respondents. The chi square statistic reports the results of a test of equality of distributions between villages that held village meetings and referenda.

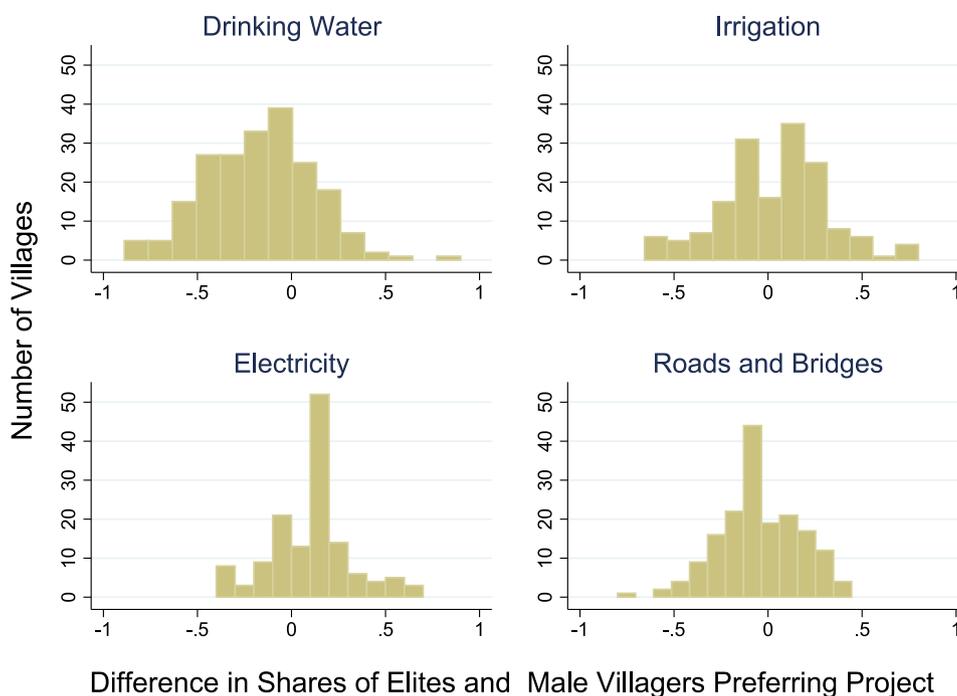


Fig. 1. Difference in the share of male elite and male villagers preferring respective project. Note: The unit of observation is the village. Graphs exclude project-village observations in which no respondents from either group preferred the respective type of project.

Table 4
Resource allocation outcomes.

Decision-making procedure:	Proposal			Selection			Prioritization		
	Village meeting	Referendum	All	Village meeting	Referendum	All	Village meeting	Referendum	All
Median number per village	5	5	5	3	3	3	1	3	3
Project type:									
Roads and bridges	27.6%	27.8%	27.7%	28.4%	29.3%	28.9%	22.2%	20.5%	21.4%
Drinking water	19.4%	19.0%	19.2%	27.1%	23.6%	25.3%	29.9%	20.5%	25.3%
Irrigation	20.8%	18.8%	19.8%	20.7%	18.1%	19.3%	25.6%	17.9%	21.8%
Electricity	15.2%	15.8%	15.5%	15.5%	19.3%	17.5%	18.8%	37.5%	28.0%
Other	16.9%	18.6%	17.8%	8.4%	9.7%	9.1%	3.4%	3.6%	3.5%
Observations	597	607	1204	310	331	641	117	112	229
p-Value for χ^2 test	0.86			0.56			0.03		

Notes: The table shows the share of villages in which a particular type of project was supported by the plurality of respondents in each of the two group of respondents. Chi square for the test of equality of distributions between villages that held village meeting and referendum are reported.

Electricity projects, which were more popular among male elites than among male villagers, were the least popular at the proposal and selection stage, but were the most likely to be prioritized.

Although the allocation procedure had no statistically significant effect on the type of projects proposed or selected, electricity projects were much more likely to be prioritized in referendum villages. While this result indicates *prima facie* that allocation outcomes produced by referenda are relatively more closely aligned with male elite preferences, the effect of referenda on prioritization of electricity projects is significant only in villages where electricity projects were not *ex-ante* preferred by either elites or male villagers. Accordingly, the result is orthogonal to the effect of the alignment of selection outcomes with *ex-ante* preferences, which is the focus of our analysis.²¹

The high variance between villages in preference differentials (see Section 4.1) implies that aggregate differences in preferences and allocation outcomes reported in Table 4 are not necessarily informative about differences in preferences and allocation outcomes *within* villages. To address this, Table 5 lists the share of proposed, selected, and prioritized projects in each village that were *ex-ante* preferred by male villagers and/or by male elites. While the share of proposed, selected, and prioritized projects preferred by male villagers is similar across both meeting and referendum villages, the share of proposed, selected, and prioritized projects preferred by male elites is consistently lower in villages that held a referendum. The difference between the two procedures for prioritized projects – 39 percent to 23 percent – is statistically significant. These results indicate that male elite preferences exercise less influence over allocation outcomes in referendum villages. Section 5.1 below provides a formal test of this hypothesis using differences in the proportions of the different groups that preferred a particular type of project.

Information on project budgets is also available from NSP administrative data. Across the 250 villages in the sample, budget data is available for 509 projects in 244 villages. The average budget of a project was \$15,129 with a standard deviation of \$13,696. There were no significant differences in the budgets of projects in villages that held village meetings as compared to those that held referenda.

4.3. Project location

In addition to the type of project, decisions on project location can be contentious. The placement of a well for drinking water outside the house of the village headman, for instance, would disadvantage villagers living in other parts of the village. In order to estimate the effect of referenda on the location of projects vis-à-vis the residence of local elites, we collected GPS coordinates of development projects in sample villages during the endline survey that was administered after the completion of development projects in 2011.

Data on the location of projects and the houses of village headmen were collected in only 175 out of the 250 sample villages, since some monitors failed to collect coordinates due to security concerns and other issues. Attrition is not correlated with the assigned procedure, however, with data available for 91 meeting villages and 84 referendum villages. Out of 541 projects for which GPS coordinates were collected, 339 were funded by NSP. The average distance between projects and the house of the village headman was 545 meters for NSP projects and 445 meters for non-NSP projects.²²

²¹ There are no good theoretical reasons for referenda to favor a specific type of project, so this difference might reflect changes in preferences that occurred over the several months between the time we measured *ex-ante* preferences and the time the allocation of resources took place.

²² Of the 175 villages for which project coordinates are available, 98 villages had the same village headman when the data was collected as during project selection. There is no difference in the share of village headmen who have retained their position in meeting villages as compared to referendum villages.

Table 5

Ex-ante preferences and resource allocation outcomes.

	Village meeting	Referendum	p-value
Share of proposed projects preferred by male villagers	0.22	0.20	0.45
Share of proposed projects preferred by male elite	0.27	0.29	0.41
Share of selected projects preferred by male villagers	0.27	0.27	0.85
Share of selected projects preferred by male elite	0.27	0.32	0.20
Share of prioritized projects preferred by male villagers	0.27	0.32	0.32
Share of prioritized projects preferred by male elite	0.23	0.39	0.01

Notes: p-value for the chi-square test of the equality of distributions between villages that held village meeting and referendum.

4.4. Subjective measures of welfare

Information on villagers' perceptions of local economic and governance outcomes comes from the midline and endline surveys (see Section 3.3). The midline and endline surveys were designed to be administered to the ten randomly selected households surveyed at baseline, with separate questionnaires for male household heads and a senior woman in the household. The midline survey was administered to 2367 male and 2141 female respondents and the endline survey was administered to 2130 male and 1858 female respondents.²³

To measure villagers' perceptions of local economic and governance outcomes, we use four perception-based binary indicators from male and female household surveys: (i) respondent disagrees with a recent decision or action of the village leadership; (ii) respondent is satisfied with the work of village leaders; (iii) respondent perceives that the household is better off than it was last year; and (iv) respondent attributes positive economic changes to actions of the village leadership (available only for the midline survey). These measures are aggregated into a summary measure based on an equally weighted average of z-scores.²⁴

The information on satisfaction at midline was collected at a time when 90 percent of NSP-funded projects had begun implementation and 20 percent of projects had already been completed. At this point, villagers had an opportunity to observe the characteristics of the project (such as location, construction method, and construction quality), even if they were not benefiting from it at the time. Accordingly, the measures gauge satisfaction with allocation outcomes,

²³ Due to the deterioration in security conditions, we were not able to conduct surveys of male heads of household in 11 villages at midline and in 32 villages at endline. For female heads of household, surveys were not conducted in 33 villages at midline and in 59 villages at endline. Differences in levels of attrition between villages with different project selection method are not statistically significant. Enumerators administering the male household questionnaire were instructed to locate and interview the same households and, whenever possible, the same villagers who participated in the baseline survey. Enumerators were able to successfully locate such respondents in 65 percent of households in which male respondents were interviewed during the baseline survey. The main reason why enumerators were not able to interview baseline respondents was that the person was away from home on the day the survey team visited the village, as it was harvest season. Differences between villages with different project selection procedures are not statistically significant for individual-level attrition. We also check that the effect on attrition of such characteristics of respondents as age, income, assets, size of household, education, and ethnicity are similar in villages with different project selection rules.

²⁴ The first indicator is taken with a negative sign, so higher values are associated with better outcomes for all indicators. For observations in which one or two out of the four indicators are missing, we calculate the average based on non-missing indicators. For observations with more than two indicators missing, the summary measure is missing. There are no significant differences in the number of missing observations across the two groups of villages.

rather than the allocation procedure *per se*. Satisfaction at endline reflects the longer-term effects of the selection procedure, as the information was collected at a time when all projects had been completed and more than 80 percent were operational for over a year.

4.5. Project implementation and performance

Using NSP administrative records on the start and end dates of 478 projects implemented across the sample villages, we construct two measures of the speed of project implementation. The first measure reports the number of days from January 1, 2008 until the start of the project. The second measure reports the number of days from January 1, 2008 until the end of the project. Both measures are winsorized at the 95th percentile. Project start dates range from April 2008 to February 2011 and completion dates range from July 2008 to September 2011.

Project impact is assessed with measures of project effectiveness and general economic welfare collected by the midline and endline surveys. Project effectiveness is assessed by eight outcomes associated with drinking water, electricity, irrigation, and road and bridge projects: (i) number of seasons in past year during which primary source of drinking water was perceived to be contaminated (drinking water); (ii) incidence of diarrhea among children in the past two weeks (drinking water); (iii) hours of electricity available in past month (electricity); (iv) yield of most recent harvest (irrigation); (v) revenue from most recent harvest (irrigation); (vi) cost of transporting 50kg of wheat to the district center or nearest market place (roads and bridges); (vii) duration of most recent trip to the district center or nearest market place (roads and bridges); and (viii) number of trips made to the district center in the past month (roads and bridges). General economic welfare is assessed by two household-level outcomes: (i) annual household income; and (ii) annual household expenditure.²⁵

5. Results

The following sections report the effects of variation in project allocation procedures on: resource allocation outcomes (Section 5.1); allocation outcomes with respect to female preferences (Section 5.2); project location (Section 5.3); perceptions of villagers (Section 5.4); and project implementation and performance (Section 5.4).

5.1. Effect of male villager and male elite preferences on resource allocation outcomes

We seek to test the hypothesis that the resource allocation procedure affects the relationship between villagers' preferences and resource allocation outcomes. This hypothesis is similar to Chattopadhyay and Duflo (2004), which estimates the effect of mandated women's representation on men's and women's preferences over the provision of local public goods. Accordingly, the specification that we use to test this hypothesis is similar. In particular, we estimate the following regression:

$$Y_{vp} = \alpha * \Delta Share_{vp} + \beta * \Delta Share_{vp} * R_v + \gamma * Share_{Male_{vp}} + \delta * Share_{Male_{vp}} * R_v + \lambda * No\ Pref_{vp} + \lambda * No\ Pref_{vp} * R_v + \mu_p + \delta_k + \epsilon_{vp} \quad (1)$$

where Y_{vp} is a resource allocation outcome, such as the budget of project p in village v or a dummy variable indicating whether project p was proposed, selected or prioritized in village v ; $\Delta Share_{vp}$ is the difference between the share of male elites in village v that prefer project p and the share of male villagers in village v who prefer the same project; R_v is a dummy variable which equals one if village v selected projects using

referendum and zero otherwise; $Share_{Male_{vp}}$ is the share of male villagers in village v who preferred project p . $No\ Pref_{vp}$ is a dummy variable that equals one if project p in village v was not preferred by any respondents (either male villagers or male elites); μ_p and δ_k are project type and quadruple fixed effects, respectively.²⁶ Standard errors are clustered at the village level.

In this specification, $\Delta Share_{vp}$ is a measure of the strength of differences in preferences between male elites and male villagers, whereas $Share_{Male_{vp}}$ is a measure of the strength of preferences of male villagers.²⁷ If male elites indeed have disproportionate influence on resource allocation outcomes and this influence is reduced in referendum villages, we expect the coefficient α_i to be positive and the coefficient β_i to be negative. By including $\Delta Share_{vp}$ and $Share_{Male_{vp}}$ in the same regression, we account for the fact that differences in preferences between male elites and male villagers may have different implications for resource allocation outcomes depending on the strength of male villager preferences. We include $No\ Pref_{vp}$ in the specification to account for the large number of projects that are not preferred by any male villagers or any male elites (see Figure A2 in the Online Appendix) and to account for non-linearities in the relationship between the vote share for projects and allocation outcomes.²⁸

Results of the estimation of Eq. (1) indicate that male elites exercised a disproportionate influence over which projects are prioritized by village meetings and the amount of money spent on projects (see columns 3 and 4 in Table 6). However, the influence of male elite preferences on which projects are prioritized is much weaker in referendum villages, with the difference between the effects under the two procedures being statistically significant at the 5 percent level. The sign of the coefficients for the effect on the type of projects that are proposed and selected is consistent with the results for prioritization, but not statistically significant at conventional levels.

To examine the effects of referenda conditional on the agenda, we estimate the effect of preferences on whether proposed projects are selected and prioritized. Results in columns 6 and 7 of Table 6 indicate that, after the proposal stage, elites exert influence over which projects are prioritized by meetings and have no effect on allocation outcomes produced by referenda, with the difference in the effects being statistically significant at the 5 percent level.

The results further show that, irrespective of the allocation procedure, the strength of male villager preferences does not affect which projects are proposed, but has a strong influence on which projects are selected and prioritized and on the money spent on projects. Male village preferences also have a strong effect on whether proposed projects are selected and prioritized.²⁹

5.2. Effect of female preferences on resource allocation outcomes

Preferences of female respondents, who represent the female elite (see Section 2.2 above), were significantly different from the prefer-

²⁶ We follow Bruhn and McKenzie (2009) in including quadruple fixed effects to account for quadruple-wise matching at the randomization stage (see Section 3.2).

²⁷ The number of people mentioned as elite members is around 15, whereas the size of the villages is approximately 1000.

²⁸ Intuitively, the difference between projects that receive no support at all and those that receive at least one vote out of ten is likely to be more important than the difference between projects that receive one and two votes out of ten. The results are similar if instead of projects that were not preferred by any male villagers or any male elites, we control for projects that were not preferred by any male elites or projects not preferred by any male villagers separately (see Table A4 in the Online Appendix).

²⁹ Note that the negative sign of the coefficient δ reflects the fact that the measure of the share of male villagers in village v who prefer project p enters the estimated equation twice – directly and as a part of the $\Delta Share_{vp}$ measure (with a negative sign). Thus, to test whether the effect of the share of male villagers on the choice of project is different in referendum villages, it is necessary to test the equality of the coefficients, δ and β . The difference between these coefficients is not statistically significant in any of the specifications. Thus, the results indicate that the strength of male villager preferences had the same influence on outcomes regardless of the selection procedure.

²⁵ Variables (iv)–(vii) were winsorized at the 95th percentile and logged.

Table 6
Effect on resource allocation outcomes of differences in preferences between male elite and male villagers.

	All projects				Proposed projects		
	Proposal	Selection	Prioritization	ln(budget)	Selection	Prioritization	ln(budget)
Difference in preference shares	(1) 0.215 [*] [1.830]	(2) 0.199 [1.555]	(3) 0.412 ^{***} [2.733]	(4) 3.525 ^{**} [2.561]	(5) 0.053 [0.420]	(6) 0.432 ^{***} [2.661]	(7) 4.007 ^{***} [2.795]
Difference in preference shares [*] referendum	-0.090 [-0.568]	-0.183 [-0.953]	-0.480 ^{**} [-2.261]	-3.771 ^{**} [-2.014]	-0.119 [-0.621]	-0.560 ^{**} [-2.398]	-4.067 ^{**} [-1.984]
Share of male villager preferences	0.186 [1.243]	0.613 ^{***} [4.029]	0.865 ^{***} [5.004]	7.777 ^{***} [4.959]	0.447 ^{***} [2.979]	1.001 ^{***} [5.437]	9.617 ^{***} [6.020]
Share of male villager preferences [*] referendum	-0.043 [-0.210]	-0.265 [-1.246]	-0.614 ^{**} [-2.522]	-5.097 ^{**} [-2.275]	-0.173 [-0.785]	-0.757 ^{**} [-2.790]	-6.335 ^{**} [-2.638]
Project is not preferred	-0.027 [-0.594]	0.018 [0.325]	0.069 [1.417]	0.734 [1.508]	0.021 [0.350]	0.100 [1.641]	0.934 [1.601]
Project is not preferred [*] referendum	-0.084 [-1.350]	-0.068 [-1.000]	-0.159 ^{**} [-2.847]	-1.357 ^{**} [-2.309]	0.042 [0.543]	-0.173 ^{**} [-2.402]	-0.941 [-1.297]
Referendum	0.066 [1.242]	0.109 [*] [1.965]	0.148 ^{***} [2.858]	1.043 [*] [1.964]	0.036 [0.608]	0.158 ^{***} [2.649]	1.179 ^{**} [1.984]
Quadruple fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
p-value for the sum of the first two coefficients	0.251	0.913	0.649	0.845	0.643	0.444	0.966
Observations	1155	1155	1155	1200	855	855	847
R-squared	0.25	0.25	0.11	0.21	0.27	0.12	0.20

Notes: The unit of observation is project type-village. There are five types of projects: (i) roads and bridges; (ii) irrigation; (iii) drinking water; (iv) electricity; and (v) other. The dependent variable assumes value one if project type is proposed, selected, or prioritized and zero otherwise, except for columns 4 and 7, where the dependent variable is the logarithm of the budget of the project in USD. Robust standard errors are clustered at the village level.

- ^{*} Significant at 10%.
- ^{**} Significant at 5%.
- ^{***} Significant at 1%.

Table 7
Effect on resource allocation outcomes of differences in preferences between female elites and male villagers.

	All projects				Proposed projects		
	Proposal	Selection	Prioritization	ln(budget)	Selection	Prioritization	ln(budget)
Difference in preference shares	(1) 0.030 [0.365]	(2) 0.036 [0.344]	(3) 0.057 [0.508]	(4) -0.799 [-0.801]	(5) 0.005 [0.046]	(6) 0.089 [0.658]	(7) -0.375 [-0.319]
Difference in preference shares [*] referendum	-0.002 [-0.020]	-0.028 [-0.204]	-0.191 [-1.348]	0.612 [0.456]	-0.046 [-0.337]	-0.246 [-1.517]	0.872 [0.582]
Share of male villager preferences	0.031 [0.247]	0.460 ^{***} [3.335]	0.488 ^{***} [3.052]	3.457 ^{**} [2.478]	0.360 ^{***} [2.915]	0.589 ^{***} [3.259]	5.044 ^{**} [3.276]
Share of male villager preferences [*] referendum	0.065 [0.411]	-0.177 [-0.967]	-0.256 [-1.169]	-0.689 [-0.349]	-0.169 [-0.945]	-0.322 [-1.297]	-1.688 [-0.777]
Project is not preferred	-0.062 [-1.398]	-0.046 [-0.858]	-0.036 [-0.676]	-0.633 [-1.295]	-0.050 [-0.860]	-0.029 [-0.442]	-0.622 [-1.083]
Project is not preferred [*] referendum	-0.031 [-0.494]	-0.060 [-0.869]	-0.037 [-0.613]	-0.070 [-0.115]	0.008 [0.108]	-0.011 [-0.144]	0.129 [0.174]
Referendum	0.036 [0.709]	0.100 [*] [1.722]	0.052 [0.952]	-0.046 [-0.086]	0.047 [0.766]	0.036 [0.561]	0.150 [0.249]
Quadruple fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
p-value for the sum of the first two coefficients	0.712	0.933	0.178	0.855	0.662	0.180	0.657
Observations	1165	1165	1165	1210	863	863	855
R-squared	0.24	0.25	0.09	0.20	0.27	0.11	0.20

Notes: The unit of observation is project type-village. There are five types of projects: (i) roads and bridges; (ii) irrigation; (iii) drinking water; (iv) electricity; and (v) other. The dependent variable assumes value one if project type is proposed, selected, or prioritized and zero otherwise, except for columns 4 and 7, where the dependent variable is the logarithm of the budget of the project in USD. Robust standard errors are clustered at the village level.

- ^{*} Significant at 10%.
- ^{**} Significant at 5%.
- ^{***} Significant at 1%.

ences of male villagers. Female elites expressed much stronger preferences for drinking water projects and expressed weaker preferences for irrigation and road and bridge projects (see [Table A4 in the Online Appendix](#)).

To estimate how referenda affect the influence of female elites, we estimate an equation similar to (1) but substitute the preferences of female elites for those of male elites. The results, presented in [Table 7](#), indicate that differences in preferences between female elites and male

villagers do not have a significant effect on the outcomes of resource allocation regardless of the selection method.³⁰

³⁰ The results are virtually the same if we also control for the difference in preferences between male elites and male villagers – that is, add the terms $\Delta Share_{vp}$ and $\Delta Share_{vp}^*R_v$ from Eq. (1). There is also no significant effect of the selection method if we look at the difference in preferences between male and female elites.

5.3. Effect on project location

To examine the effect of referenda on the location of implemented projects, we estimate the following OLS regression:

$$\ln(1+Distance)_{iv} = \alpha + \beta_1 \cdot Referendum_v \cdot Same\ Headman_v \cdot NSP_{iv} + \beta_2 \cdot Referendum_v \cdot Same\ Headman_v \cdot non\ NSP_{iv} + \beta_3 \cdot Referendum_v \cdot Different\ Headman_v \cdot NSP_{iv} + \beta_4 \cdot Referendum_v \cdot Different\ Headman_v \cdot non\ NSP_{iv} + \beta_5 \cdot Same\ Headman_v \cdot NSP_{iv} + \beta_6 \cdot Same\ Headman_v \cdot non\ NSP_{iv} + \beta_7 \cdot Different\ Headman_v \cdot NSP_{iv} + \beta_8 \cdot Different\ Headman_v \cdot non\ NSP_{iv} + \delta_k + \epsilon_{ij} \tag{3}$$

where $\ln(1 + Distance)_{iv}$ is the natural logarithm of the distance (in meters) between project i and the house of the village head in village v ; $Same\ Headman_v$ indicates that the same person held the position of village headman during NSP project selection and during the collection of the GPS coordinates; NSP_{iv} indicates whether project i was funded by NSP; $Different\ Headman_v = 1 - Same\ Headman_v$; $nonNSP_{iv} = 1 - NSP_{iv}$; and δ_k is a quadruple fixed effect. To ensure that results are robust to controlling for village size, we also include the median distance between the houses of the ten randomly-selected households from the baseline survey. Non-NSP projects are included in the regression to account for the endogeneity of the location of the headmen's houses.³¹ Thus, β_1 identifies the effect of allocation procedures conditioning on the location of other development projects in the village.

We use two alternative approaches to account for possible correlation of residuals. First, we cluster standard errors at the village level to account for the fact that the treatment status is determined at the village level. Second, since the location of different projects is likely to be interdependent both within villages and between neighboring villages, we account for the possibility of spatial correlation of residuals. In particular, spatial correlation among projects is assumed to be declining linearly up to a distance cutoff and to be zero after that cutoff (Conley, 1999; Hsiang, 2010). We use the cutoff of 15 kilometers, but also check that results are robust to cutoffs of 10 kilometers and 20 kilometers.

The results presented in columns (1) and (2) of Table 8 indicate that NSP projects selected by referenda were located farther away from houses of the village headmen, compared to NSP projects selected by meetings. The difference is statistically significant at the 10 percent level for clustered standard errors and at 5 percent for spatially correlated errors. There is no such effect for non-NSP projects or in villages where the village headman assumed his position after NSP projects were selected.

To test the robustness of these results, we exclude those projects for which the intensity of benefits provided is not necessarily associated with location. Specifically, we exclude electricity projects (the measure records the location of the generators and thus does not reflect which households receive electricity) and transportation projects such as roads and bridges (which benefit not only the households located near the repaired road or bridge, but all the households along the road). The results in columns (3)–(8) of Table 8 indicate that the magnitude of the estimate of the effect of referenda slightly increases if these projects are excluded and that the statistical significance of the estimate increases specifically after the exclusion of electricity projects.

To check that the effect is not driven by outliers, Fig. 2 provides a comparison of the conditional density functions of the distance between projects locations and the houses of village headmen for the sub-sample of villages in which the current headman held the position

³¹ For instance, if the headmen live near the center of the village and development projects are also more likely to be located near the center, a correlation would exist between headmen's homes and the location of projects, but would not be indicative of elite capture.

during project selection. The distance for referendum villages nearly first order stochastically dominates the distance for meeting villages.³²

5.4. Effect on subjective measures of welfare

To examine the effect of referenda on how villagers perceive the local economic situation and the quality of local governance, we estimate the following OLS regression:

$$Y_{iv}^{FU} = \alpha + \beta \cdot Referendum_v + \delta_k + \epsilon_{ij} \tag{4}$$

where Y_{iv}^{FU} is the summary measure of perceptions for respondent i in village v ; $Referendum_v$ is a dummy variable that equals one if village v was assigned to allocate resources by referendum and zero otherwise, and δ_k is a quadruple fixed effect. Standard errors are clustered at the village level. We estimate the regression for the full sample of respondents, as well as for male and female household respondents separately.³³

Column (1) in Table 9 presents the aggregate results, which indicate that villagers' perceptions at midline were significantly more positive in villages that held a referendum, but that the differences disappear by endline. Results in columns (4) and (7) show that the effect holds for both male and female respondents. Thus, the results suggest that there is a positive but short-term effect of referenda on villagers' perceptions.

To further explore whether elite influence over resource allocation affects villagers perceptions of the local economy and of the quality of local governance, we estimate the following OLS regression:

$$Y_{ij}^{FU} = \alpha + \sum_{g=1}^3 Pref_{vg} \times \gamma_g + \delta_k + \epsilon_{ij} \tag{5}$$

where $Pref_{vg}$ indicates whether any of the selected projects was preferred by group g in village v . As in the previous specification, we use a quadruple fixed effect and allow for clustering of standard errors at the village level.

Column (2) of Table 9 shows that elite influence over project selection is associated with significantly worse perceptions of local governance and the local economy at midline. Again, these differences disappear by endline. Perceptions at midline are significantly more positive where selected projects were preferred by male villagers and are significantly more negative if the selected projects were preferred by either the male or female elites. The results in columns (5) and (8) show that the direction of the effect is the same for both male and female respondents, but that it is statistically significant only for male respondents. While the results indicate that elite influence over project selection negatively affects villagers' perceptions, such results – by virtue of the endogeneity of the alignment between the type of selected project and preferences – do not necessarily reflect the causal effect of elite influence on villagers' perceptions.

To determine whether the positive effect of referenda on villagers' perceptions is driven by actual outcomes or by the process itself, we estimate the following regression:

$$Y_{ij}^{FU} = \alpha + \beta \cdot Referendum_v + \sum_{g=1}^3 Pref_{vg} \times \gamma_g + \delta_k + \mu_l + \epsilon_{ij} \tag{6}$$

where all the variables are the same as above and μ_l is a project type fixed effect. Thus, the specification estimates the effect of the allocation procedure on villagers' perceptions, controlling for preference alignment and the type of selected projects.

Results presented in column (3) of Table 9 indicate that the effect of referenda on villagers' perceptions at midline slightly decreases in

³² Figures A3 and A4 in the Online Appendix show that there is no such pattern if the sample consists of non-NSP projects or of NSP projects in villages where the headman changed after project selection.

³³ Analogous results for each of the individual indicators used in the construction of the summary index are reported in Table A5 in the Online Appendix.

Table 8
Effect of selection method on location of projects.

Dependent variable: Sample:	Natural log of distance between project location and village headman's house							
	All projects		Excluding electricity		Excluding roads and bridges		Excluding electricity and roads and bridges	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Referendum * same headman * NSP project	0.515 (0.293) [0.226]**	0.538 (0.292)* [0.215]**	0.577 (0.311)* [0.280]**	0.610 (0.311)* [0.266]**	0.640 (0.327)* [0.208]**	0.655 (0.328)** [0.207]**	0.710 (0.352)** [0.280]**	0.730 (0.352)** [0.273]**
Referendum * same headman * non-NSP project	0.057 (0.368) [0.350]	0.093 (0.363) [0.337]	-0.122 (0.387) [0.365]	-0.098 (0.382) [0.352]	0.384 (0.410) [0.416]	0.416 (0.405) [0.406]	0.223 (0.436) [0.445]	0.239 (0.429) [0.437]
Referendum * different headman * NSP project	-0.303 (0.303) [0.248]	-0.109 (0.276) [0.243]	-0.150 (0.310) [0.233]	0.116 (0.284) [0.219]	-0.264 (0.373) [0.274]	-0.036 (0.336) [0.254]	-0.106 (0.389) [0.262]	0.237 (0.348) [0.236]
Referendum * different headman * non-NSP project	-0.348 (0.395) [0.439]	-0.431 (0.395) [0.406]	-0.245 (0.384) [0.433]	-0.322 (0.383) [0.392]	-0.418 (0.448) [0.352]	-0.482 (0.451) [0.356]	-0.282 (0.443) [0.333]	-0.322 (0.444) [0.341]
NSP project	0.032 (0.254) [0.292]	-0.104 (0.261) [0.315]	0.197 (0.260) [0.277]	0.040 (0.263) [0.303]	0.012 (0.351) [0.354]	-0.139 (0.363) [0.365]	0.267 (0.372) [0.343]	0.091 (0.378) [0.357]
Same headman	-0.129 (0.431) [0.475]	-0.208 (0.421) [0.430]	0.069 (0.453) [0.508]	0.017 (0.439) [0.459]	-0.192 (0.490) [0.486]	-0.271 (0.479) [0.447]	0.036 (0.541) [0.540]	0.001 (0.521) [0.504]
Same headman * NSP project	0.039 (0.367) [0.390]	0.163 (0.367) [0.395]	-0.124 (0.403) [0.420]	0.017 (0.398) [0.422]	0.131 (0.447) [0.512]	0.277 (0.452) [0.504]	-0.091 (0.497) [0.539]	0.085 (0.496) [0.529]
Ln(distance between households)		0.352 (0.106)*** [0.082]***		0.408 (0.115)*** [0.110]***		0.343 (0.122)*** [0.080]***		0.422 (0.139)*** [0.116]***
Quadruple fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	541	541	509	509	421	421	389	389
R-squared	0.231	0.248	0.232	0.255	0.268	0.283	0.269	0.291
Number of villages	175	175	170	170	162	162	154	154

Notes: Robust standard errors adjusted for clustering at the village-cluster level in square brackets. Standard errors corrected for spatial correlation and serial correlation in round brackets.

* Significant at 10%.
** Significant at 5%.
*** Significant at 1%.

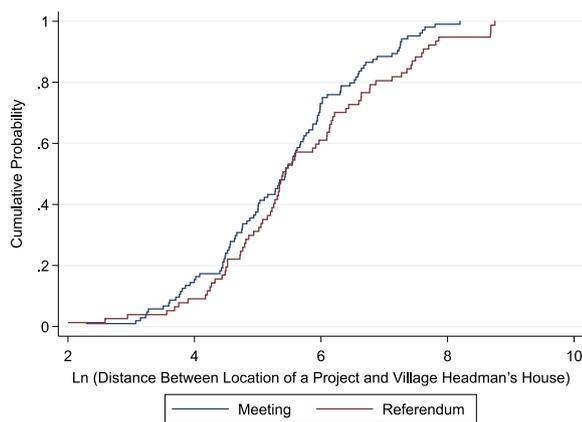


Fig. 2. Distance between location of NSP projects and house of village headman. (Sample restricted to villages in which current headman held position during project selection).

magnitude, but remains statistically significant. The results in columns (6) and (9) show that the effect holds for male, as well as for female respondents. Thus, the results suggest that the effect of referenda on perceptions is driven mainly by the process, rather than by differences produced by referenda in allocation outcomes. As in the previous case, the results are merely suggestive given the endogeneity of the alignment between preferences and allocations.

5.5. Effect on project implementation and performance

To examine the effect of referenda on the speed of project implementation, we estimate the following OLS regression:

$$Y_{vp} = \alpha + \beta \cdot Ref_v + \delta_k + \mu_i + \epsilon_{ij} \tag{7}$$

where Y_{vp} is a measure of how quickly project p in village v was started or completed (as per NSP administrative data); Ref_v is a dummy variable that equals one if village v was assigned to allocate resources by referendum and zero otherwise; μ_i is a project type fixed effect; and δ_k is a quadruple fixed effect. Standard errors are clustered at the village level. In some specifications, we also include as control variables the number of projects implemented in village v and the logarithm of the budget of project p in village v .

The results in Table 10 indicate that projects selected and prioritized through referenda start and finish slightly earlier than those selected by meetings, but that the difference is not statistically significant.

To assess the effect of referenda on measures of project performance, we examine how it affects villagers' access to basic services and infrastructure and objective measures of household welfare, such as income and consumption. We estimate the following OLS regression:

$$Y_{viti} = \alpha + \beta_1 \cdot (Ref_v \times \tau_1) + \beta_2 \cdot (Ref_v \times \tau_2) + \gamma \cdot \tau_2 + \delta_k \cdot \tau_1 + \delta_k \cdot \tau_2 + \epsilon_{viti} \tag{8}$$

where Y_{viti} is a household-level outcome provided at midline ($t=1$) or endline ($t=2$) by respondent i in village v ; Ref_v is a dummy variable that equals one if village v was assigned to allocate resources by referendum and zero otherwise; τ_t is the dummy for time t , and δ_k is a quadruple fixed effect. Standard errors are clustered at the village level.

Table 9
Effect of selection method on subjective measures of welfare.

	Index of villagers' attitudes			Index of male villagers' attitudes			Index of female villagers' attitudes		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Referendum * midline	0.087*** [0.025]		0.069*** [0.024]	0.087*** [0.025]		0.069*** [0.024]	0.085*** [0.027]		0.082*** [0.027]
Selected project preferred by male villagers * midline		0.065* [0.035]	0.071** [0.034]		0.065* [0.035]	0.071** [0.034]		0.085** [0.039]	0.096* [0.039]
Selected project preferred by male elite * midline		-0.091*** [0.029]	-0.087*** [0.028]		-0.091*** [0.029]	-0.087*** [0.028]		-0.089*** [0.031]	-0.093*** [0.030]
Selected project preferred by female elite * midline		-0.065** [0.029]	-0.051 [0.035]		-0.065** [0.029]	-0.052 [0.035]		-0.04 [0.032]	-0.039 [0.036]
Referendum * endline	0.006 [0.027]		-0.001 [0.027]	0.006 [0.027]		-0.001 [0.027]	0.017 [0.029]		0.006 [0.027]
Selected project Preferred by male villagers * endline		0.001 [0.040]	0.005 [0.041]		0.001 [0.040]	0.005 [0.041]		0.022 [0.044]	
Selected project preferred by male elite * endline		0.02 [0.034]	0.015 [0.033]		0.02 [0.034]	0.015 [0.033]		0.026 [0.036]	
Selected project preferred by female elite * endline		-0.018 [0.036]	-0.015 [0.042]		-0.018 [0.036]	-0.015 [0.042]		-0.037 [0.038]	
Quadruple-survey fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Types of selected projects	No	No	Yes	No	No	Yes	No	No	Yes
Observations	4498	4498	4498	4497	4497	4497	3998	3998	3998
R-squared	0.148	0.149	0.156	0.148	0.149	0.156	0.147	0.148	0.156

Notes: Robust standard errors are clustered at the village level.

- * Significant at 10%.
- ** Significant at 5%.
- *** Significant at 1%.

The results presented in Table 11 indicate that referenda increase harvest revenue (row 5) and reduce transportation costs (row 6) at midline, which potentially suggests that the procedure is more effective for irrigation and transportation projects. However, neither of these effects is present at endline. Rather, at endline, referenda have a statistically significant negative effect on harvest yields (row 4), while reducing the number of seasons that villagers went without clean drinking water (row 1).

The endline effects offer indicative evidence that referenda improve the effectiveness of drinking water projects, while decreasing the effectiveness of irrigation projects. Since drinking water projects are relatively preferred by male villagers, while irrigation projects are relatively preferred by male elites, such results also suggest that referenda improve the effectiveness of projects preferred by villagers, while diminishing the effectiveness of projects preferred by elites. However, as the choice of project type – and thereby the impact on the

outcomes associated with such projects – is endogenous to the method of selection, the results on project impact should be interpreted with caution.

The results in rows 9 and 10 indicate that the method of project selection has no effect, at midline or endline, on levels of household income or consumption. There is thus no evidence to indicate that referenda have any effect on objective measures of household welfare. Overall and based on the effects observed on general economic outcomes, there is no evidence to indicate that referenda have any effect on objective measures of household welfare.

6. Discussion of results

In theory, direct democracy moves allocation outcomes closer to the position of the median voter (Romer and Rosenthal, 1979). In so doing, direct democracy can resolve principal-agent problems that induce

Table 10
Effect of selection method on the speed of project implementation.

	Days to project start				Days to project completion			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Referendum	-13.07 [13.64]	-11.09 [13.77]	-8.64 [13.23]	-9.41 [13.51]	-7.21 [15.57]	-6.11 [15.42]	-3.89 [14.95]	-3.53 [14.81]
Number of projects in a village			33.93*** [8.34]	26.86*** [9.36]			30.75*** [9.04]	34.05*** [9.03]
Log (budget of the project in USD)				-31.90** [12.89]				14.9 [12.83]
Type of project fixed effects	No	Yes	Yes	Yes	No	Yes	Yes	Yes
Quadruple fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	478	478	478	478	478	478	478	478
R-squared	0.5	0.52	0.54	0.56	0.55	0.57	0.59	0.59

Notes: The unit of observation is project. The dependent variable in (1-4) measures the number of days between council election in a village and the start of a project. The dependent variable in (5-8) measures the number of days between the start of the project and the day the project was finished. Standard errors clustered at the village level in parentheses.

- * Significant at 10%.
- ** Significant at 5%.
- *** Significant at 1%.

Table 11
Effect of selection method on project benefits and general economic outcomes.

Dependent variable:	Referendum ^a midline	Standard error	Referendum ^a endline	Standard error	Obs.	R-squared
Panel A. Benefits delivered by projects						
(1) Seasons in past year water was of poor quality	0.076	[0.091]	-0.170 [*]	[0.090]	3806	0.15
(2) Child suffered diarrhea in past 2 weeks			-0.012	[0.020]	2465	0.06
(3) Hours of electricity in past month (winsorized and logged)	-0.118	[0.178]	0.101	[0.186]	4464	0.42
(4) Yield of most recent harvest (tons, winsorized and logged)	-0.031	[0.032]	-0.061 ^{**}	[0.030]	2954	0.42
(5) Revenue from most recent harvest (winsorized and logged)	0.316 [*]	[0.163]	0.148	[0.138]	2926	0.40
(6) Cost of transporting 50 kg. of wheat to nearest market (winsorized and logged)	-0.112 ^{**}	[0.055]	-0.059	[0.055]	1248	0.590
(7) Duration of most recent trip to nearest market (winsorized and logged)	0.003	[0.066]	-0.001	[0.072]	4461	0.441
(8) Trips made to district center in past month (winsorized and logged)	0.012	[0.062]	0.023	[0.069]	4480	0.233
Panel B. General economic outcomes						
(9) Income earned in past year winsorized and logged	0.023	[0.030]	0.014	[0.034]	4439	0.20
(10) Annual expenditure winsorized and logged	-0.005	[0.035]	-0.006	[0.034]	4172	0.17

Notes: Each row represents a separate regression. Measures are based on answers of villagers to surveys conducted approximately two years (midline) and four years (endline) after council elections. Some of the questions were asked only during one of the surveys, so the coefficients for the other survey are not available. Standard errors clustered at the village level in parentheses. *** Significant at 1%.

^a Significant at 10%.

** Significant at 5%.

divergence between public preferences and the policy outcomes of representative democracies (Kau and Rubin, 1979; Kalt and Zupan, 1984; Peltzman, 1984). However, where divergence between policy and public preferences arises not because of differences in interests but due to information asymmetries over the potential benefits of different policy choices (Maskin and Tirole, 2004), direct democracy may negatively impact welfare outcomes. The welfare effects of direct democracy are further complicated by the extent to which the allocation procedure allows the “unbundling” of different issues and prevents logrolling (Matsusaka, 1995), which has ambiguous welfare effects (Buchanan and Tullock, 1962).

Given the extent to which local authority is concentrated in traditional elites, resource allocation exercises in rural Afghanistan are likely to be severely afflicted by principal-agent problems. Although development council members are democratically elected, their reelection concerns are weak given ambiguity over when follow-up elections will occur. Conversely, information asymmetries over the potential benefits of different project options are unlikely to be significant given the local nature of projects, the ability of villagers to discuss proposed projects before selection, and the absence of distortions caused by special interest groups or mass media. Although logrolling allows elites in traditional representative systems to deviate from median voter preferences, the role of such practices in this context is likely to be limited since the allocation procedure is broadly conceived as a one-shot event due to uncertainties concerning the timeline of future projects.

The results of the study indicate that, in this context, allocation procedures affect the relative ability of elites to influence allocation outcomes. Specifically, allocation decisions made through consultative procedures grant more influence to elites over the type and location of projects, relative to directly democratic procedures. The results further indicate that elite influence over allocation decisions lowers general satisfaction with the local leadership and worsens perceptions of the local economy and the quality of local governance.³⁴ Taken together, these results suggest that, in this context, direct democracy mitigates

³⁴ Referenda increase villagers' satisfaction, even after controlling for the type of selected project. At the same time, satisfaction is affected by selection outcomes *per se*, with lower levels of satisfaction in instances where selected projects were preferred by elites and higher levels in cases where selected projects were preferred by villagers. The results thus suggest that direct democracy increases satisfaction both as a result of the process itself, as well as by better aligning allocation outcomes with public preferences.

elite capture arising from principal-agent problems, rather than affecting benign forms of elite control driven by information asymmetries and which might increase public welfare.

The finding that consultative procedures grant elites greater influence over allocation decisions appears to result in part from the dominance by development council members in meetings. According to monitoring data collected during consultation meetings, development council members had more influence than other attendees in the selection of projects in 98 percent of meetings, and in 35 percent of meetings, council members fully determined the choice over the final project.³⁵ This finding is consistent with Humphreys et al. (2006) who observe discussion leaders' preferences to be a significant determinant of the outcomes of deliberative meetings.³⁶

Although agenda-setting rules were identical in village meetings and referenda, the fact that the selection procedure was known in advance could have affected the choice of proposed projects. However, there was no significant differences in the effect of *ex-ante* preferences of elites on proposed projects, whereas the effect on prioritization of projects and the amount of money allocated to projects holds if we condition on projects being proposed. Thus, our results also suggest that the influence of elites on allocation outcomes is not driven by their agenda-setting power.

The results indicate that female elites do not influence project choice in either village meetings or referenda. Since women are traditionally excluded from the village-level decision making process, this result is not surprising. The results also indicate that female elite influence does not have a positive effect on the satisfaction of female villagers, suggesting that preferences of female elites diverge from those of female villagers.³⁷

³⁵ The influence of council members over allocation decisions does not necessarily imply greater elite influence because we consider as elites those local leaders who were identified as such before the start of the program. However, the preferences of the development council are likely to be closely aligned with the preferences of the pre-existing elite, both because of the large overlap with pre-existing elites (see Section 2.1) but also because village leaders are likely to have significant influence even over those members of the council who were not members of the pre-existing elite.

³⁶ Note however, that Ban et al. (2012) provide evidence that deliberative procedures in India's village parliaments are not fully captured by the elites.

³⁷ Unfortunately, we don't have measures of *ex-ante* preferences for non-elite women in the village, so we cannot directly test how aligned the selected projects were with their preferences and if the choice of their most preferred project increased their satisfaction *ex-post*.

The finding that the process of direct democracy improves villagers' perceptions is consistent with Olken (2010),³⁸ but the finding that allocation procedures affect allocation outcomes contrasts with the finding of Olken (2010) that procedures do not affect the choice of general projects other than limited effects on the location of the women's project. The difference in results may be due to the difference in sample size between the two studies: 49 villages in Olken (2010) compared with 250 villages in this study. In addition, two differences in context may also explain the divergence of results.

First, Indonesian villages receive funding for general projects periodically, which allows for log-rolling and inter-temporal trade between interest groups within a village and can in turn cause policy outcomes to diverge from the preferences of both the median voter and the elite. In contrast, women's projects in Indonesia were a one-shot event, which is more comparable with the situation in Afghanistan. For projects in Afghanistan and for women's projects in Indonesia, there was thus limited scope for log-rolling, which made the unbundling effect of direct democracy less relevant.

Second, the study in Indonesia was conducted following reforms that attempted to increase the accountability of local leaders. These reforms could have reduced principal-agent problems and in turn reduced the ability of elites to realize their preferences, even in village meetings. This may explain the limited effect of direct democracy in the Indonesia case, whereas the contrasting results in Afghanistan indicate that principal-agent problems are potentially more pronounced.

7. Conclusion

This paper examines the effect of decision-making rules on resource allocation outcomes. Using data from 250 villages in Afghanistan, we compare allocation outcomes under direct democracy with outcomes under consultative procedures. Our findings indicate that direct democracy limits elite influence over policy outcomes, while consultative processes are more susceptible to elite capture. Direct democracy also improves perceptions of local governance and economic welfare, but has no impact either on the speed of project implementation or on objective measures of economic welfare. The results therefore suggest that elite influence affects the distribution of benefits from these projects, but not their overall efficiency.

The findings of the study are especially noteworthy given the context. While direct democracy is almost unheard of in rural Afghanistan, the consultation meeting procedure employed by the experiment approximated the method by which public decisions are traditionally made, with a council of tribal elders and other local notables convening an open discussion among community members with the aim of reaching a decision by consensus.³⁹ As such procedures command great legitimacy in Afghan society, the finding that consultation meetings proved relatively susceptible to elite capture suggests that direct democracy can serve a valuable role in improving the equity of public goods provision even in societies that lack democratic traditions.

An important limitation of our study is that we only have indirect data on the distribution of benefits derived from projects as, for a proxy of benefits, we rely on a noisy measure of project location. This limits the capacity of the study to assess whether elites benefit disproportionately from projects selected by village meetings relative to those

³⁸ Note, however, that our measures of satisfaction are different as Olken (2010) considers villagers' satisfaction with the project specifically, while we ask about satisfaction with the village elites more generally. We focus on villagers' satisfaction with their elites rather than with the project itself as our concern is with elite capture of resources and how people perceive elite performance rather than with the project *per se*, which was being implemented but had not been complete at the time of the survey.

³⁹ The only important deviation from the traditional decision-making process was the participation of women both in development councils and in village meetings. The results in Section 5.2 indicate, however, that female elite preferences did not have a significant effect on the outcomes of resource allocation.

selected by referenda. Future work can address this issue by identifying and collecting more precise data on the distribution of benefits of development projects to elites and their constituents.

Appendix A. Supplementary material

Supplementary data associated with this article can be found in the online version at <http://dx.doi.org/10.1016/j.jdeveco.2016.10.001>.

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